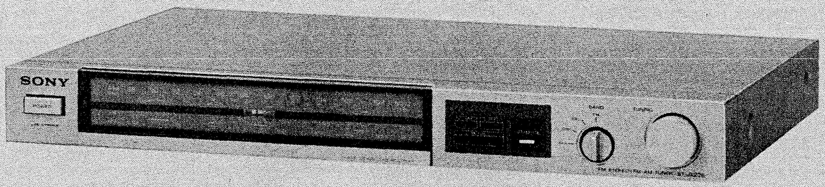
ST-JX22S

E Model



FM STEREO/FM-AM TUNER

SPECIFICATIONS

FM tuner section

Tuning range	87.5 MHz - 108 MHz
Antenna terminals	300 ohms, balanced 75 ohms, unbalanced
Intermediate frequency	10.7 MHz

	(at 75 kHz deviation)
Sensitivity	at 50 dB quieting 16.1 dBf, 3.5 μV (mono) ; 38.3 dBf, 45 μV (stereo)
Usable sensitivity	10.3 dBf, 1.8 μV (IHF)
Signal-to-noise ratio	82 dB (mono) 77 dB (stereo)
Harmonic distortion (at 1 kHz)	0.15% (mono) 0.3% (stereo)
IM distortion	0.15% (mono) 0.3% (stereo)
Separation (at 1 kHz)	45 dB
Frequency response	30 Hz – 15 kHz $^{+0.5}_{-2}$dB

Selectivity	at 400 kHz 60 dB
Capture ratio	1.0 dB
AM suppression ratio	54 dB
Image response ratio	50 dB
IF response ratio	90 dB
Spurious response ratio	70 dB
RF intermodulation	60 dB (IHF)
Muting threshold	approx. 25.2 dBf, 10 μV
Output level/ impedance	at 75 kHz deviation 750 mV, 2.7 k ohms

– Continued on page 2 –

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY SHADING AND MARK ⚠ ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

MICROFILM

SONY®

SERVICE MANUAL

SW/MW tuner section

		SW_1	SW_2	MW
Tuning range		3.2 MHz – 7.3 MHz	9.5 MHz – 21.75 MHz	522 kHz – 1,602 kHz
Antenna	ferrite-bar antenna	none	none	provided
	external antenna terminal	provided	provided	provided
Intermediate frequency		450 kHz	450 kHz	450 kHz
Usable sensitivity	ferrite-bar antenna	—	—	200 μV/m (at 1,000 kHz)
	external antenna	20 μV (at 5 MHz)	30 μV (at 15 MHz)	100 μV (at 1,000 kHz)
Signal-to-noise ratio		54 dB (at 5 mV)	54 dB (at 5 mV)	54 dB (at 50 mV/m)
Harmonic distortion		0.3% (at 5 mV, 400 Hz)	0.3% (at 5 mV, 400 Hz)	0.3% (at 50 mV/m, 400 Hz)
Selectivity		30 dB (9 kHz)	30 dB (9 kHz)	35 dB (9 kHz)

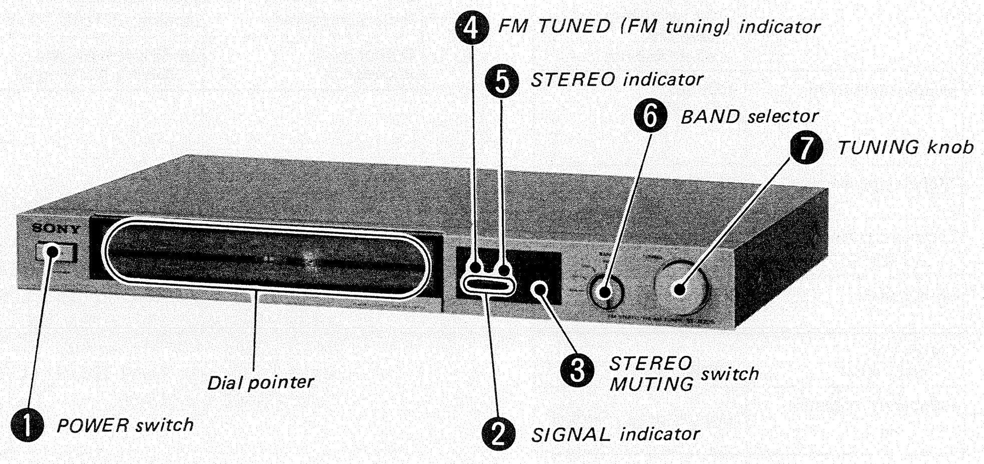
General

System	FM stereo, FM/AM superheterodyne tuner
Power requirements	110-120 or 220-240 V ac adjustable 50/60 Hz
Power consumption	8 watts
Dimensions	Approx. 430 × 55 × 310 mm (w/h/d) (17 × 2 1/4 × 12 1/4 inches) including projecting parts and controls
Weight	Approx. 2.6 kg (5 lbs 12 oz) net Approx. 3.1 kg (6 lbs 14 oz) in shipping carton

FEATURES

- An FM mode/muting switch automatically switches the FM reception mode between stereo and monaural as appropriate, and automatically activates a muting circuit when you are tuning between FM stations to eliminate interstation noise.
- The 3-step LED signal strength indicator provides an easy readout of the received signal strength.
- An FM tuning indicator makes precise tuning easy.
- New ICs in the IF amplifier and in the multiplex decoder contribute to the excellent signal-to-noise ratio.

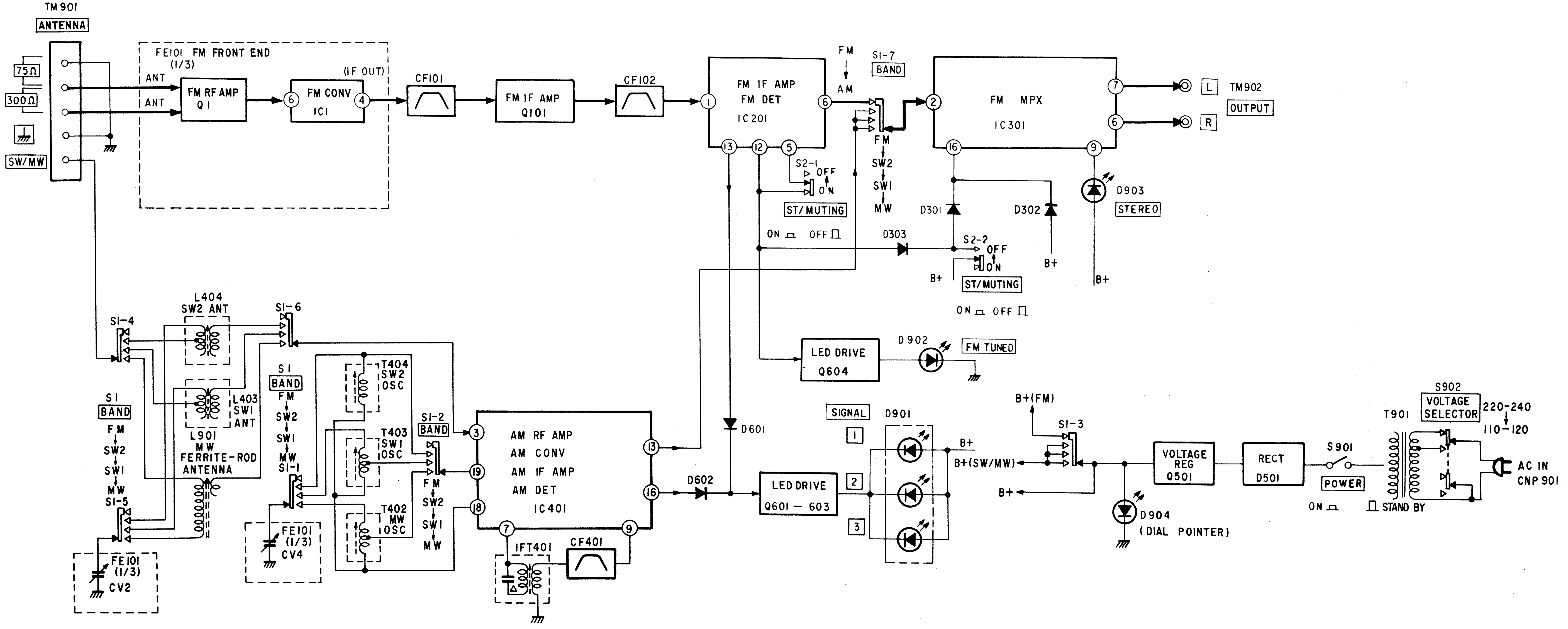
FUNCTION OF CONTROLS



④ FM TUNED (FM tuning) indicator
⑤ STEREO indicator
⑥ BAND selector
⑦ TUNING knob
SONY
Dial pointer
③ STEREO MUTING switch
① POWER switch
② SIGNAL indicator

SECTION 1
OUTLINE

1-1. BLOCK DIAGRAMS

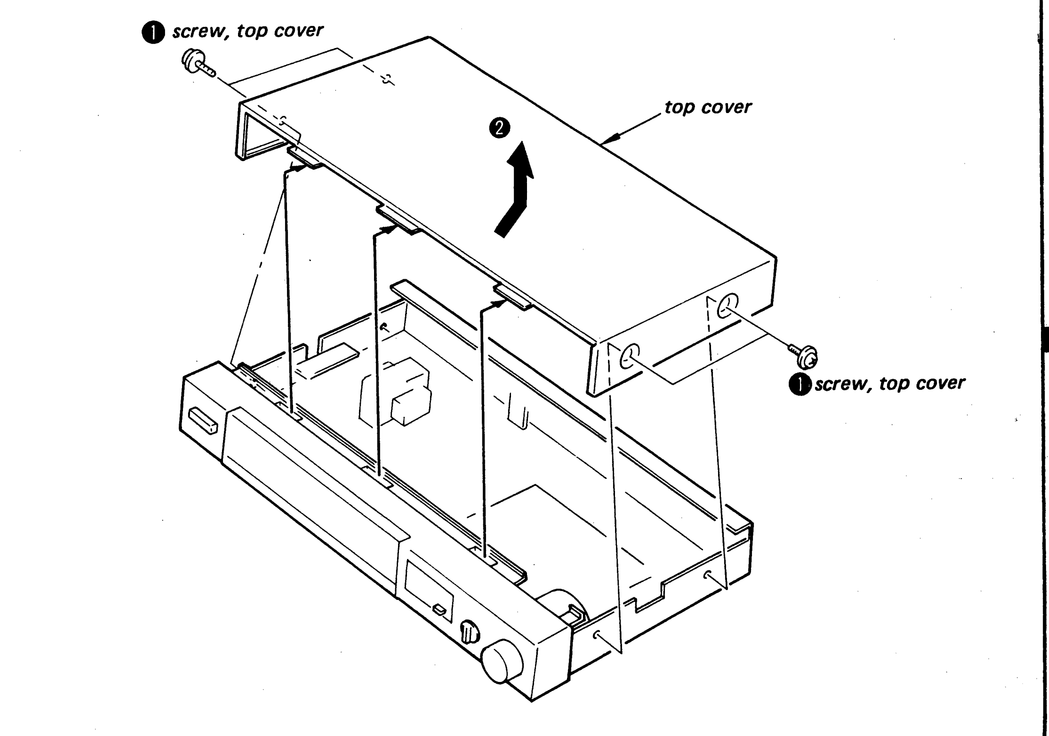

TM901
ANTENNA
75Ω
300Ω
SW/MW
FE101 FM FRONT END
(1/3)
ANT
ANT
FM RF AMP
Q1
FM CONV
IC1
(IF OUT)
CF101
FM IF AMP
Q101
CF102
FM IF AMP
FM DET
IC201
FM
AM
S1-7
BAND
FM
SW2
SW1
MW
FM MPX
IC301
L
R
TM902
OUTPUT
S2-1
OFF
ON
ST/MUTING
ON OFF
D301
D302
D303
S2-2
OFF
ON
ST/MUTING
ON OFF
B+
B+
B+
D903
STEREO
LED DRIVE
Q604
D902
FM TUNED
L404
SW2 ANT
S1-4
S1-6
L403
SW1
ANT
S1
BAND
FM
SW2
SW1
MW
S1-5
L901
MW
FERRITE-ROD
ANTENNA
FE101
(1/3)
CV2
S1
BAND
FM
SW2
SW1
MW
S1-1
FE101
(1/3)
CV4
T404
SW2
OSC
T403
SW1
OSC
T402
MW
OSC
S1-2
BAND
FM
SW2
SW1
MW
AM RF AMP
AM CONV
AM IF AMP
AM DET
IC401
IFT401
CF401
D601
D602
LED DRIVE
Q601 — 603
SIGNAL
1
2
3
D901
B+
B+(SW/MW)
B+
B+(FM)
S1-3
D904
(DIAL POINTER)
VOLTAGE
REG
Q501
RECT
D501
S901
POWER
ON
STAND BY
T901
S902
VOLTAGE
SELECTOR
220-240
110-120
AC IN
CNP 901

SECTION 2
DISASSEMBLY

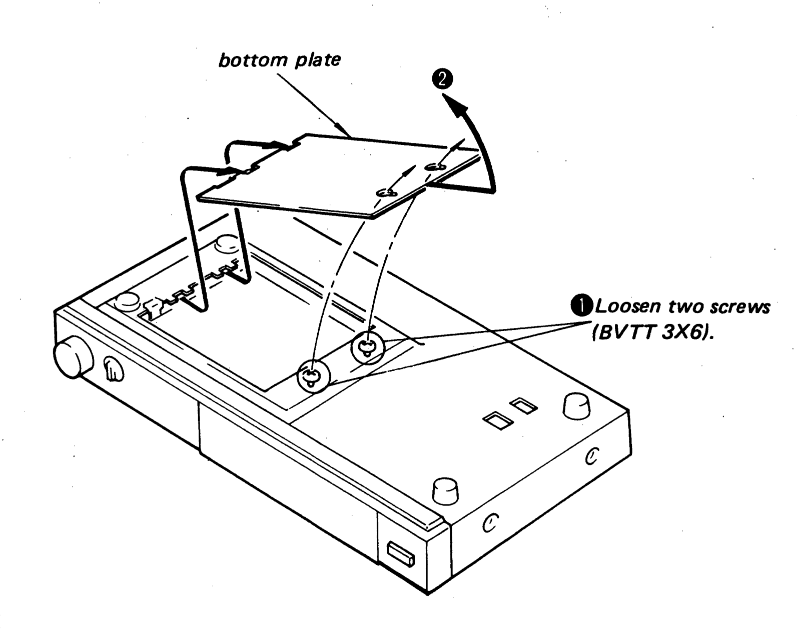
2-1. REMOVAL

Note: Follow the disassembly procedure in the numerical order given.

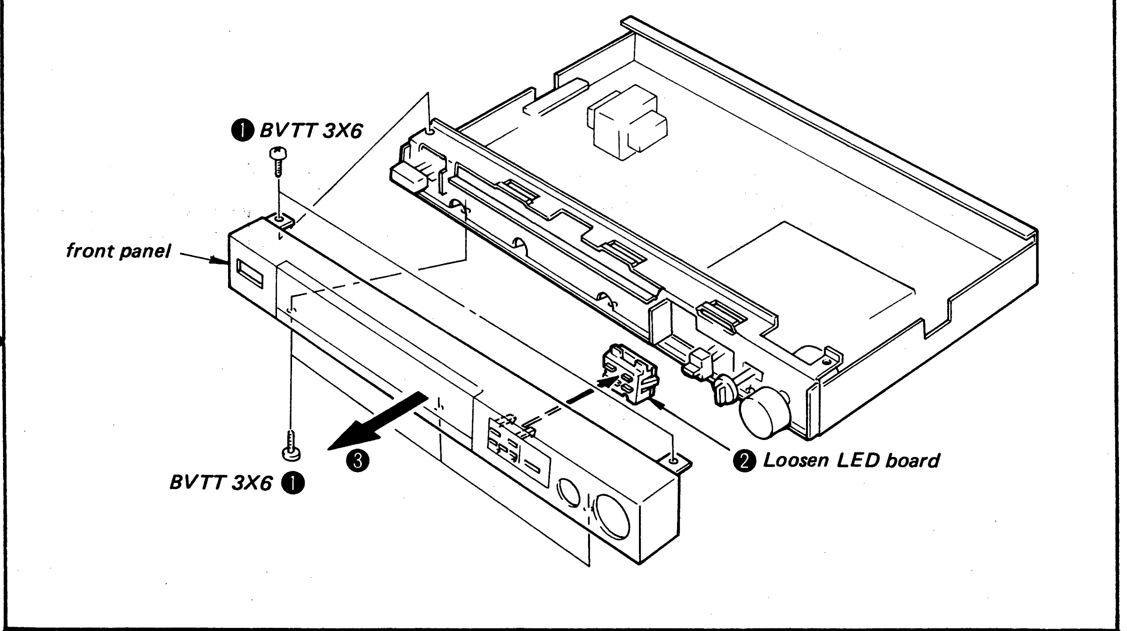
TOP COVER


❶ screw, top cover
top cover
❷
❶ screw, top cover

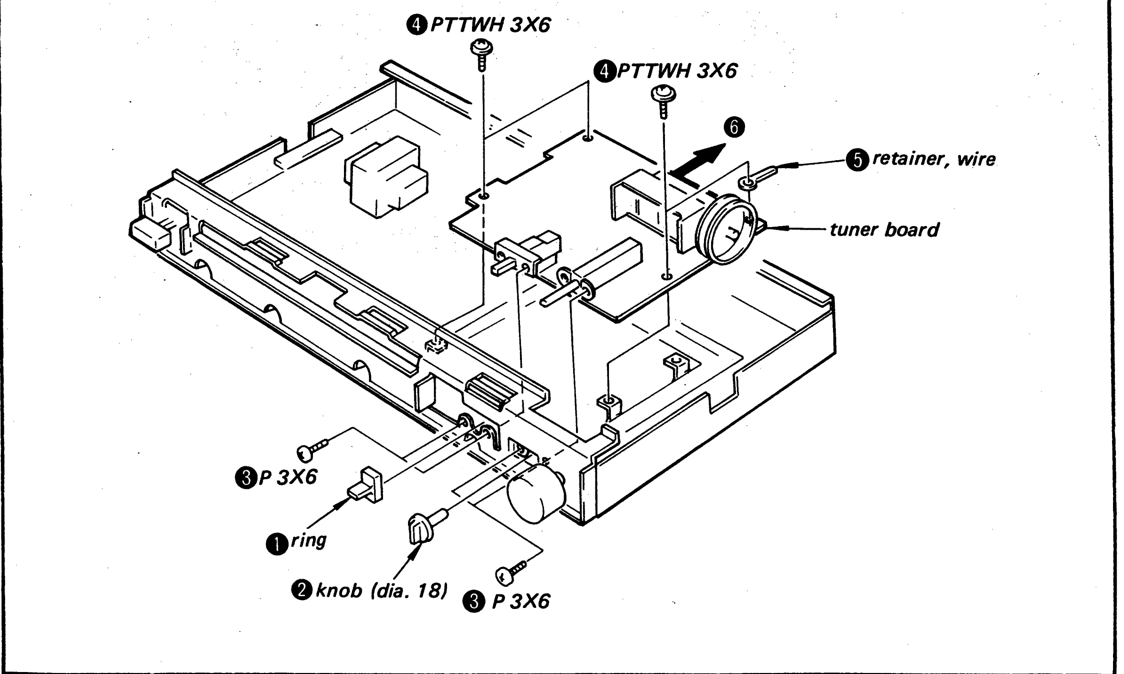
BOTTOM PLATE


bottom plate
❷
❶ Loosen two screws (BVTT 3X6).

FRONT PANEL

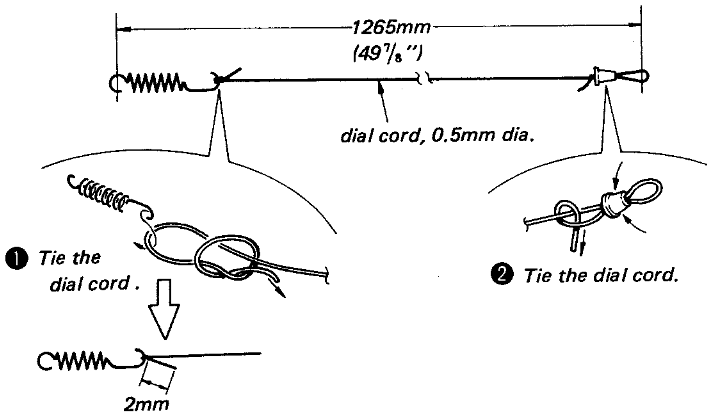

❶ BVTT 3X6
front panel
❷ Loosen LED board
BVTT 3X6 ❶
❸

TUNER BOARD

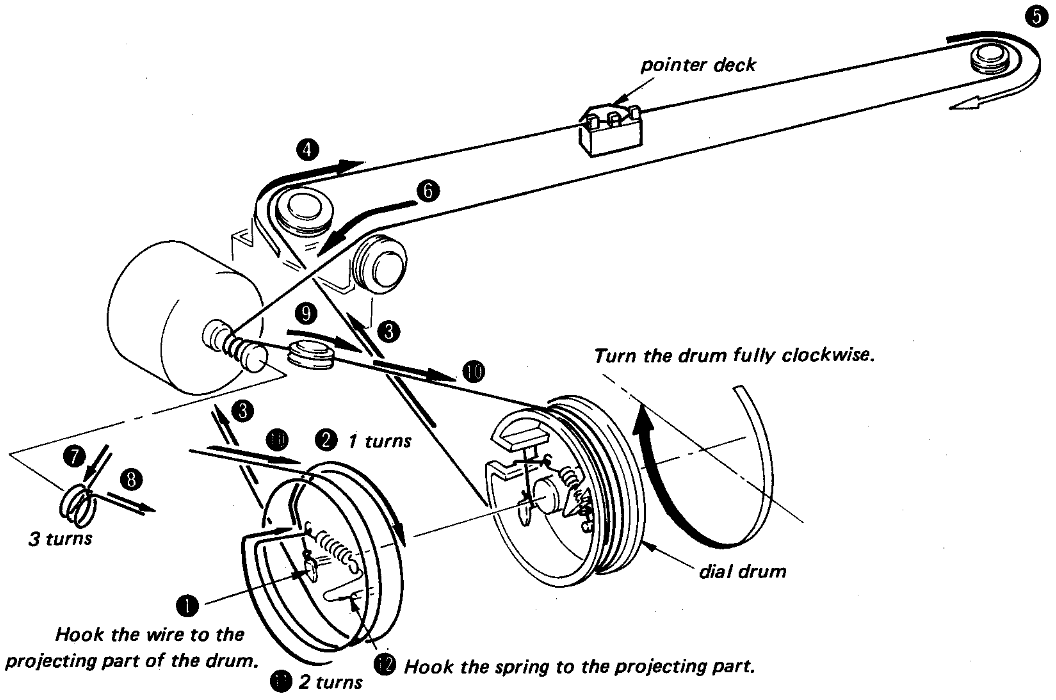

❹ PTTWH 3X6
❹ PTTWH 3X6
❻
❺ retainer, wire
tuner board
❸ P 3X6
❶ ring
❷ knob (dia. 18)
❸ P 3X6

2-2. DIAL CORD STRINGING

1) Preparation


1265mm
(49⅞")
dial cord, 0.5mm dia.
❶ Tie the dial cord.
2mm
❷ Tie the dial cord.

2) Stringing


❺
pointer deck
❹
❻
❾
❸
❿
Turn the drum fully clockwise.
❸
⓫
❷ 1 turns
❼
❽
3 turns
dial drum
❶
Hook the wire to the projecting part of the drum.
⓫ 2 turns
⓬ Hook the spring to the projecting part.

3) Dial Pointer Installation

1. Receive a broadcasting station signal and set the dial pointer on the dial scale.
2. Apply a drop of contact cement to the dial pointer.

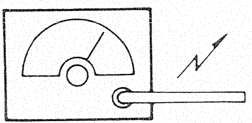
SECTION 3
ADJUSTMENTS

AM SECTION

Setting
Band Selector: MW, SW1, SW2

Setup:

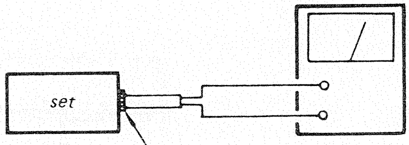
AM rf signal generator



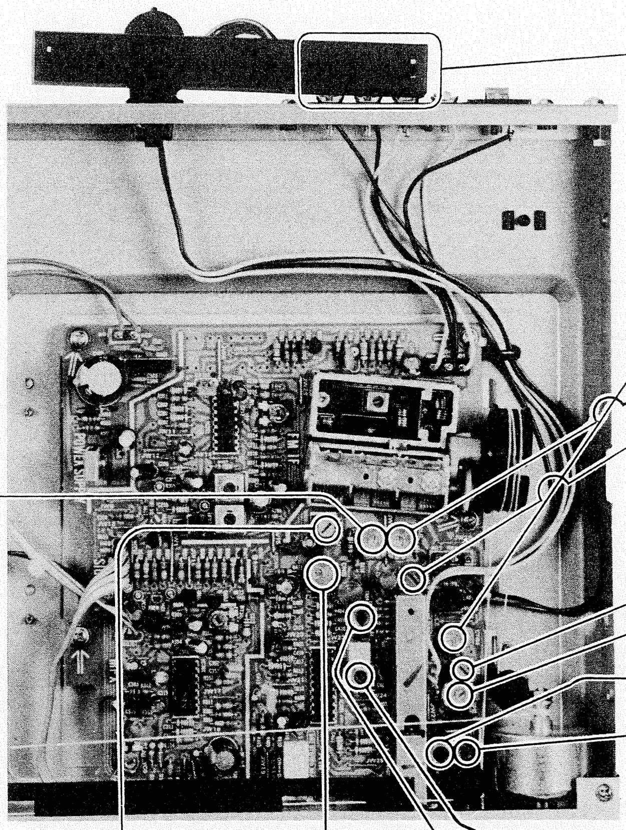
Put the lead-wire antenna close to the set.

30% amplitude modulation by 400 Hz signal

VOM Ⓐ
(range: 0.5–5V ac)



- Repeat the procedures in each adjustment several times, and the frequency coverage and tracking adjustments should be finally done by the trimmer capacitors.



MW TRACKING ADJUSTMENT	
Adjust for a maximum reading on VOM Ⓐ	
L 901	600kHz
CT 404	1,400kHz

MW FREQUENCY COVERAGE ADJUSTMENT	
Adjust for a maximum reading on VOM Ⓐ	
CT 401	1,660kHz
T 401	515kHz

SW1 TRACKING ADJUSTMENT	
Adjust for a maximum reading on VOM Ⓐ	
L 403	3.5MHz
CT 405	6.5MHz

L 404	10 MHz
CT 406	20 MHz
Adjust for a maximum reading on VOM Ⓐ	
SW2 TRACKING ADJUSTMENT	

CT 402	T 403
7.6MHz	3MHz
Adjust for a maximum reading on VOM Ⓐ	
SW1 FREQUENCY COVERAGE ADJUSTMENT	

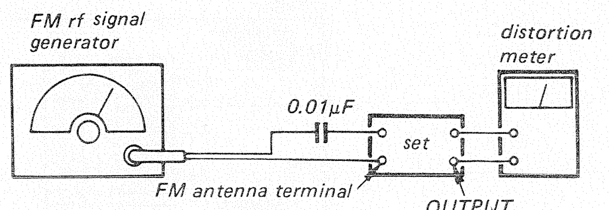
CT 403	T 404
22.4 MHz	9 MHz
Adjust for a maximum reading on VOM Ⓐ	
SW2 FREQUENCY COVERAGE ADJUSTMENT	

IFT 401	450 kHz
Adjust for maximum reading on VTVM Ⓐ	
IF ALIGNMENT	

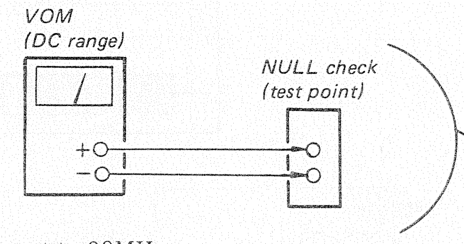
FM SECTION

FM Discriminator Alignment

Procedure:


FM rf signal generator
distortion meter
0.01μF
set
FM antenna terminal
OUTPUT

Carrier frequency: 98MHz
Output level: 1mV (60dB)
Modulation: 1kHz, 75kHz deviation (100%)
Mode: mono


VOM (DC range)
NULL check (test point)
+
−

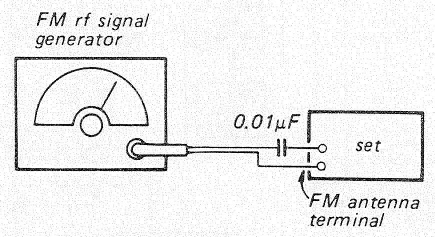
1. Tune the set to 98MHz.
2. Connect a VOM to NULL CHECK (test point) and adjust the primary-side core (red) of IFT201 for 0V DC reading on the VOM.
3. Adjust the secondary-side core (black) of IFT202 for a minimum reading on the distortion meter.

Note: Repeat the secondary-side and primary-side adjustments several times.

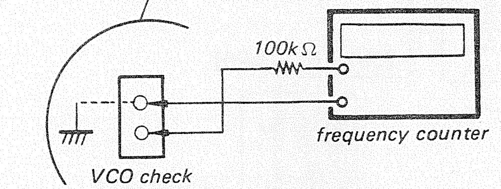
VCO Adjustment

A) Regular Method

Procedure:


FM rf signal generator
0.01μF
set
FM antenna terminal

Carrier frequency: 98MHz
Modulation: no modulation
Output level: 1mV (60dB)

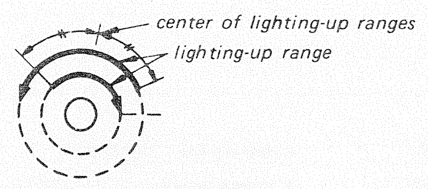

100kΩ
frequency counter
VCO check

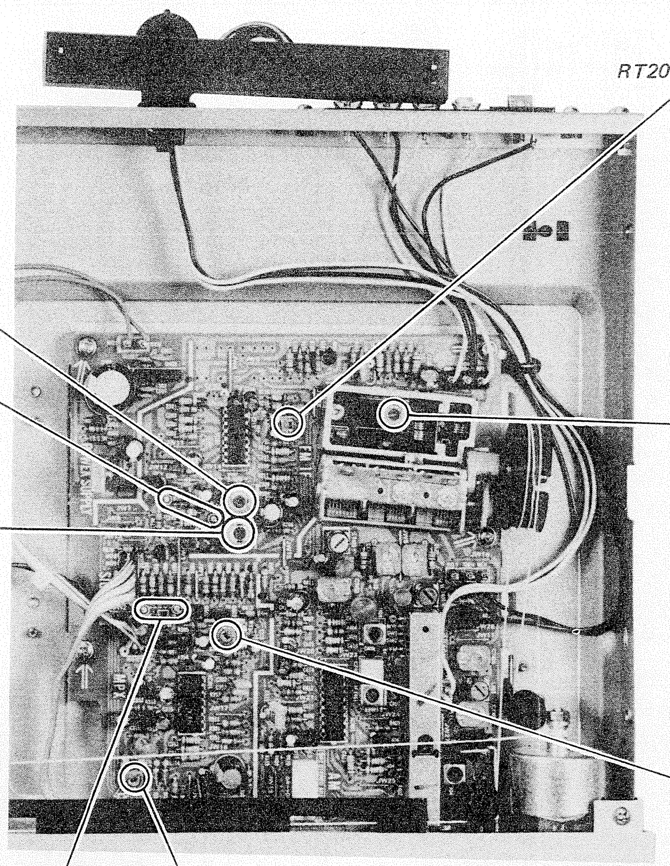
1. Tune the set to 98MHz.
2. Adjust RT301 for 19kHz ± 50Hz on the counter.

B) Simple Method

Procedure:

1. Tune the set to the FM stereo broadcasting signal.
2. Turn RT301 clockwise or counterclockwise and memorize the lighting-up range of the stereo lamp.
3. Secure RT301 at the center of the lighting-up range of both turns as shown below.


center of lighting-up ranges
lighting-up range

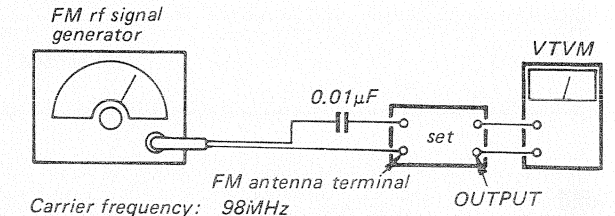

IFT201
TP.1 TP.2
IFT202
RT201
IFT1
RT302
TP.3
RT301

FM Muting Level Adjustment

Setting:

STEREO MUTING switch (S2): ON

Procedure:


FM rf signal generator
VTVM
0.01μF
set
FM antenna terminal
OUTPUT

Carrier frequency: 98MHz
Modulation: 1kHz, 75KHz deviation (100%)
Output level: 10μV (20dB)

1. Tune the set to 98MHz.
2. Set the output level of the FM rf signal generator to 20dB (10μV).
3. Turn RT201 and stop it just when the VTVM indication suddenly decreases.

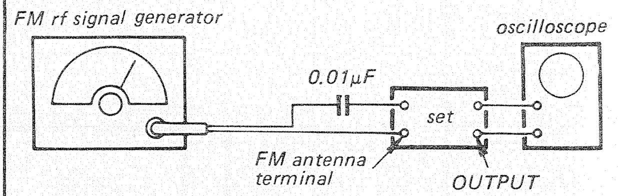
The FM front-end is carefully adjusted at the factory and is supplied as one whole block for replacement. In case of replacement, perform the following adjustments.

1. Front-End IFT Adjustment.

Setting:

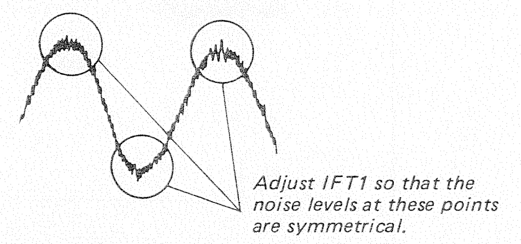
STEREO MUTING switch (S2): OFF

Procedure:


FM rf signal generator
oscilloscope
0.01μF
set
FM antenna terminal
OUTPUT

Carrier frequency: 98MHz
Modulation: 1kHz, 75kHz deviation (100%)
Output level: 2μV (6dB)

Adjust IFT1 so that the noise levels at the peak of the waveforms on the oscilloscope are symmetrical and the output level is maximum.


Adjust IFT1 so that the noise levels at these points are symmetrical.

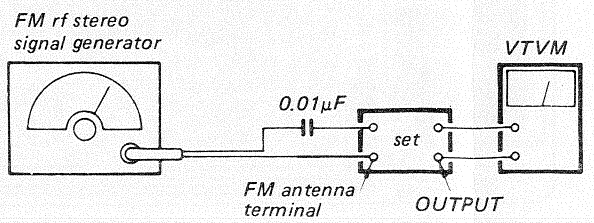
2. Dial Pointer Setting
   (Refer to Dial Pointer Setting on page 7.)
3. MW Tuning Adjustment
   (Refer to MW Tuning Adjustment on page 8.)

FM Stereo Separation Adjustment

Setting:

STEREO MUTING switch (S2): ON

Procedure:


FM rf stereo signal generator
VTVM
0.01μF
set
FM antenna terminal
OUTPUT

Carrier frequency: 98MHz
Output level: 1mV (60dB)
Mode: stereo
Modulation:
Audio (1kHz): 33.75kHz deviation (45%)
Pilot (19kHz): 7.5kHz deviation (10%)
Sub-channel (38kHz): 33.75kHz deviation (45%)

FM stereo signal generator output channel	VTVM connection	VTVM reading (dB)
L-CH	L-CH	Ⓐ
R-CH	L-CH	Ⓑ Adjust RT302 for minimum reading.
R-CH	R-CH	Ⓒ
L-CH	R-CH	Ⓓ Adjust RT302 for minimum reading.

L-CH Stereo Separation: Ⓐ − Ⓑ
R-CH Stereo Separation: Ⓒ − Ⓓ

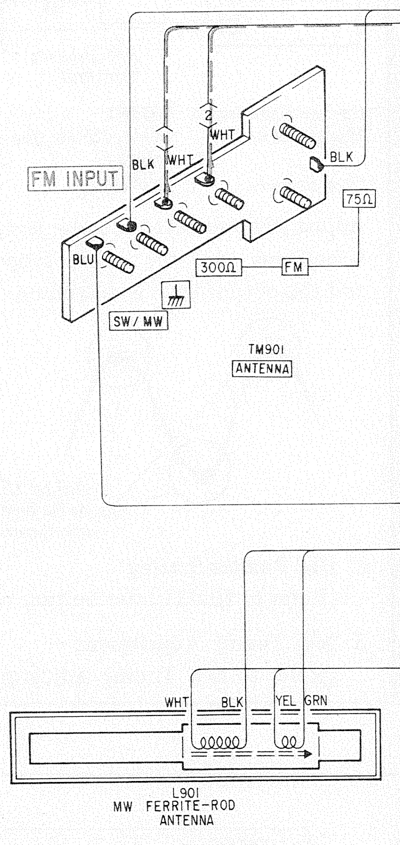
The separations of both channels should be equal.

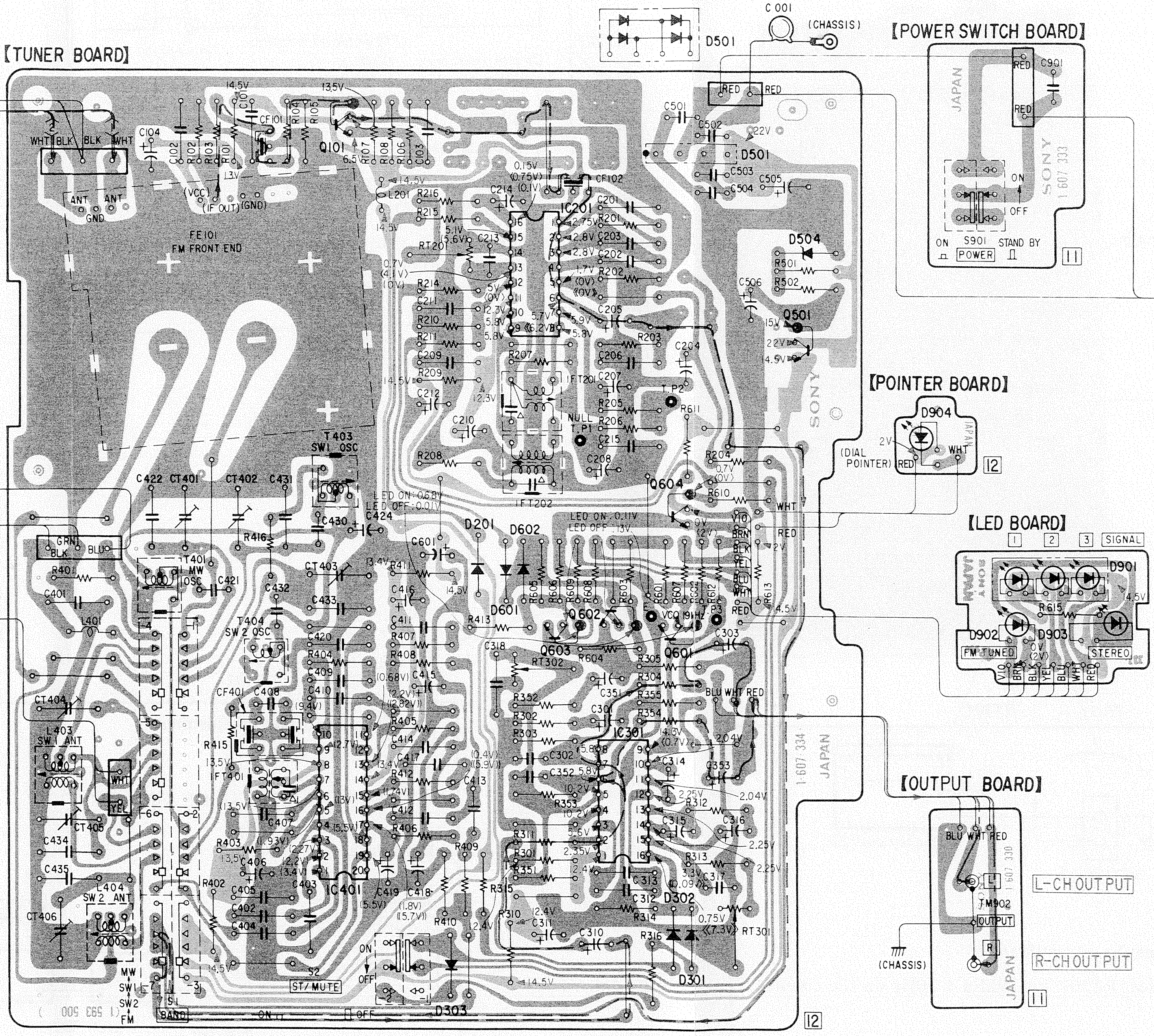
SECTION 4
DIAGRAMS

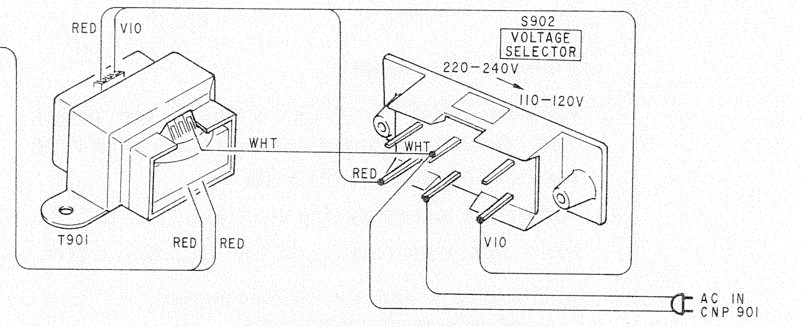
A B C D E F G

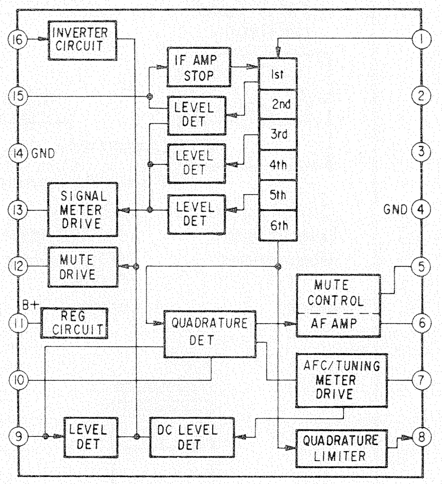
4-1. MOUNTING DIAGRAMS – *Conductor Side* –

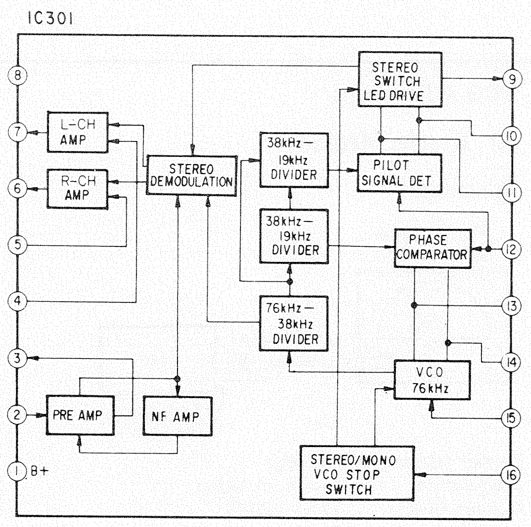
	C	D	E
Q IC	101 IC201 IC401	603 602 604 601 IC301 501	
D	201 601 602 303	501 504 302 301	904 901 902 903

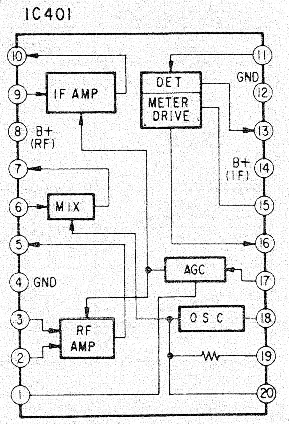

FM INPUT
BLK
WHT
BLU
75Ω
300Ω
FM
SW/MW
TM901
ANTENNA
WHT
BLK
YEL
GRN
L901
MW FERRITE-ROD ANTENNA


[TUNER BOARD]
D501
C001
(CHASSIS)
[POWER SWITCH BOARD]
JAPAN
SONY
RED
C901
ON
OFF
S901
STAND BY
POWER
11
FE101
FM FRONT END
ANT
GND
(VCC)
(IF OUT)
(GND)
Q101
CF101
CF102
IC201
Q501
D504
D501
R501
R502
C501
C502
C503
C504
C505
C506
T403
SW1 OSC
T401
MW OSC
T404
SW2 OSC
L403
SW1 ANT
L404
SW2 ANT
L401
IC401
IFT401
CF401
CT401
CT402
CT403
CT404
CT405
CT406
IC301
Q601
Q602
Q603
Q604
D201
D301
D302
D303
D601
D602
IFT201
IFT202
T P1
T P2
NULL
RT201
RT301
RT302
ST/MUTE
S2
ON
OFF
MW
SW1
SW2
FM
BAND
S1
LED ON 0.11V
LED OFF 13V
12
[POINTER BOARD]
D904
2V
(DIAL POINTER)
RED
WHT
12
[LED BOARD]
1
2
3
SIGNAL
D901
D902
D903
R615
FM TUNED
STEREO
4.5V
12
[OUTPUT BOARD]
BLU
WHT
RED
L-CH OUTPUT
TM902
OUTPUT
R-CH OUTPUT
(CHASSIS)
JAPAN
11


RED
V10
WHT
T901
RED
RED
S902
VOLTAGE SELECTOR
220-240V
110-120V
WHT
RED
V10
AC IN
CNP 901


IC201
INVERTER CIRCUIT
IF AMP STOP
1st
2nd
3rd
4th
5th
6th
LEVEL DET
LEVEL DET
LEVEL DET
GND
SIGNAL METER DRIVE
MUTE DRIVE
B+
REG CIRCUIT
QUADRATURE DET
MUTE CONTROL
AF AMP
AFC/TUNING METER DRIVE
LEVEL DET
DC LEVEL DET
QUADRATURE LIMITER
GND
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16


IC301
L-CH AMP
R-CH AMP
STEREO DEMODULATION
38kHz–19kHz DIVIDER
38kHz–19kHz DIVIDER
76kHz–38kHz DIVIDER
STEREO SWITCH LED DRIVE
PILOT SIGNAL DET
PHASE COMPARATOR
VCO 76kHz
PRE AMP
NF AMP
STEREO/MONO VCO STOP SWITCH
B+
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16


IC401
IF AMP
DET METER DRIVE
B+ (RF)
B+ (IF)
GND
MIX
AGC
GND
RF AMP
OSC
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20

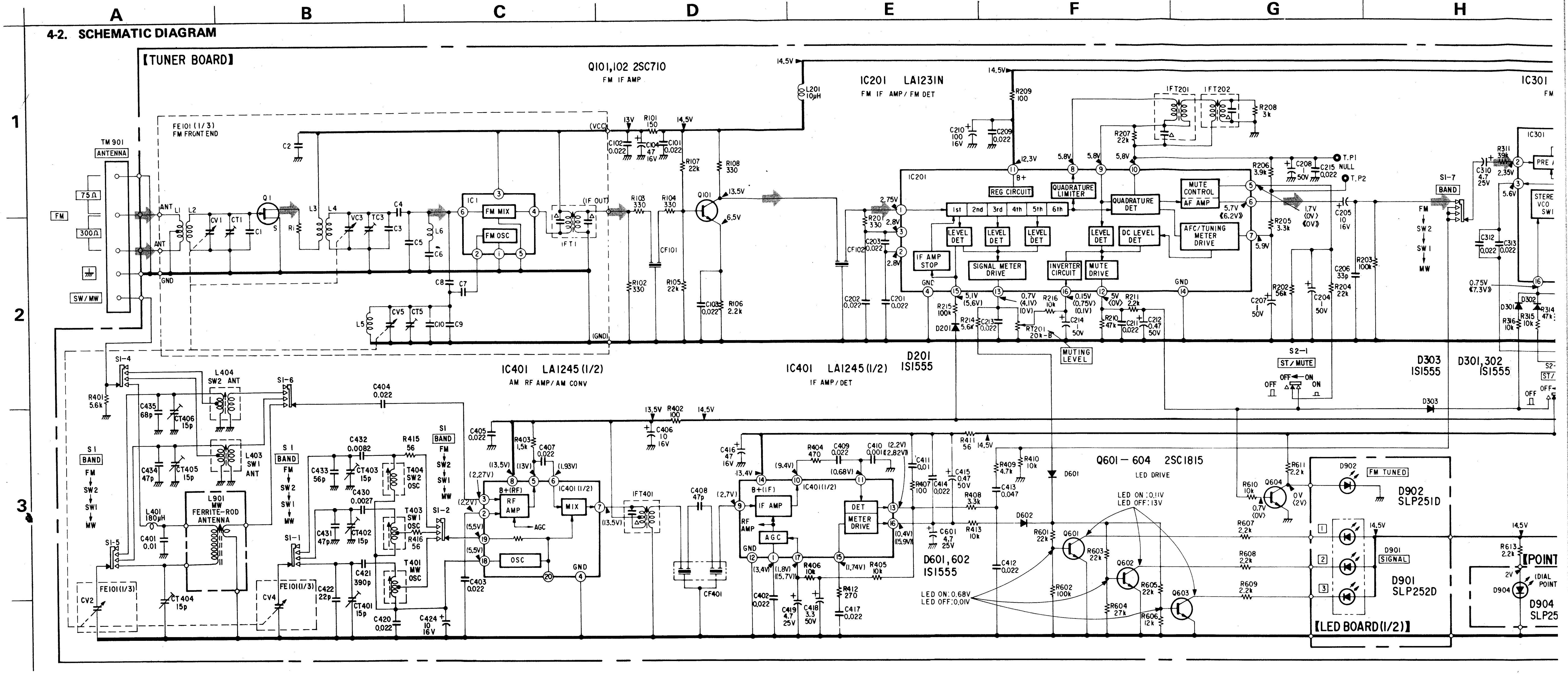
1 2 3 4 5

Note:

- ○—: parts extracted from the component side.
- [ ]←: indicates side identified with part number.
- ▨ : B+ pattern

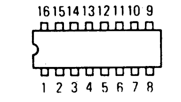
- ▬▶: signal path
- ▬▶: L-CH signal path
- ▬▶: R-CH signal path

4-2. SCHEMATIC DIAGRAM

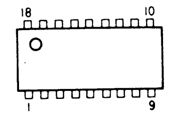

A
B
C
D
E
F
G
H
1
2
3
【TUNER BOARD】
Q101,102 2SC710
FM IF AMP
IC201 LA1231N
FM IF AMP/FM DET
IC301
TM901
ANTENNA
FM
75Ω
300Ω
SW/MW
FE101 (1/3)
FM FRONT END
ANT
GND
Q1
L1
L2
CV1
CT1
C1
L3
L4
VC3
TC3
C3
C4
C5
L6
C6
C7
C8
L5
CV5
CT5
C10
C9
IC1
FM MIX
FM OSC
IFT1
(VCC)
(IF OUT)
(GND)
Q101
R101 150
C101 0.022
C102 0.022
C104 47 16V
R103 330
R104 330
R107 22k
R108 330
R102 330
R105 22k
C103 0.022
R106 2.2k
CF101
CF102
L201 10μH
R209 100
C210 100 16V
C209 0.022
IFT201
IFT202
R207 22k
R208 3k
REG CIRCUIT
QUADRATURE LIMITER
QUADRATURE DET
MUTE CONTROL
AF AMP
1st
2nd
3rd
4th
5th
6th
LEVEL DET
DC LEVEL DET
AFC/TUNING METER DRIVE
IF AMP STOP
SIGNAL METER DRIVE
INVERTER CIRCUIT
MUTE DRIVE
MUTING LEVEL
R206 3.9k
C208 50V
C215 0.022
T.P1 NULL
T.P2
R205 3.3k
C205 10 16V
R202 56k
C207 50V
C204 50V
C206 33p
R204 22k
R203 100k
R201 330
C203 0.022
C202 0.022
C201 0.022
R215 100k
D201
R214 5.6k
C213 0.022
R216 10k
RT201 20k-B
C214 50V
R210 47k
C211 0.022
R211 2.2k
C212 0.47 50V
S1-7
BAND
FM
SW2
SW1
MW
R311 39k
C310 4.7 25V
PRE
STEREO VCO SW
C312 0.022
C313 0.022
D301
D302
R315 10k
R316 10k
R314 47k
S2-1
ST/MUTE
OFF
ON
D201 1S1555
D303 1S1555
D301,302 1S1555
D303
IC401 LA1245 (1/2)
AM RF AMP/AM CONV
IC401 LA1245 (1/2)
IF AMP/DET
S1-4
R401 5.6k
L404 SW2 ANT
S1-6
C435 68p
CT406 15p
C434 47p
CT405 15p
L403 SW1 ANT
S1 BAND
L401 180μH
C401 0.01
L901 MW FERRITE-ROD ANTENNA
S1-5
FE101(1/3)
CV2
CT404 15p
C404 0.022
C433 56p
C432 0.0082
CT403 15p
C430 0.0027
R415 56
T404 SW2 OSC
T403 SW1 OSC
R416 56
C431 47p
CT402 15p
S1-1
FE101(1/3)
CV4
C422 22p
C421 390p
CT401 15p
T401 MW OSC
C420 0.022
C424 10 16V
S1-2
C405 0.022
C403 0.022
R403 1.5k
C407 0.022
B+(RF)
RF AMP
AGC
MIX
OSC
GND
IC401 (1/2)
IFT401
R402 100
C406 10 16V
C408 47p
CF401
C416 47 16V
R404 470
C409 0.022
C410 0.001
C411 0.01
B+(IF)
IF AMP
RF AMP
AGC
DET
METER DRIVE
R406 10k
R405 10k
R412 270
C402 0.022
C419 4.7 25V
C418 3.3 50V
C417 0.022
R407 100
C414 0.022
C415 0.47 50V
R408 3.3k
R413 10k
C601 4.7 25V
R409 4.7k
R410 10k
R411 56
C413 0.047
C412 0.022
D601
D602
D601,602 1S1555
LED ON: 0.68V
LED OFF: 0.01V
Q601-604 2SC1815
LED DRIVE
LED ON: 0.11V
LED OFF: 13V
R601 22k
R602 100k
R603 22k
R604 27k
R605 22k
R606 12k
Q601
Q602
Q603
Q604
R610 10k
R611 2.2k
R607 2.2k
R608 2.2k
R609 2.2k
D902
FM TUNED
D902 SLP251D
D901
SIGNAL
D901 SLP252D
【LED BOARD(1/2)】
R613 2.2k
【POINT
(DIAL POINT
D904
D904 SLP25

Semiconductor Lead Layouts

LA1231, μPC1235C


16 15 14 13 12 11 10 9
1 2 3 4 5 6 7 8

LA1245



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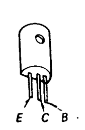

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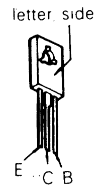
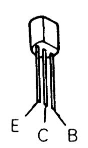
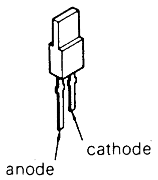

letter side
E
C B

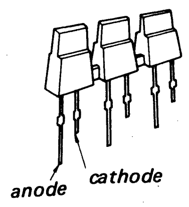
2SC1364



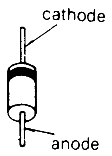
SLP251D
SLP252D-03


cathode
anode

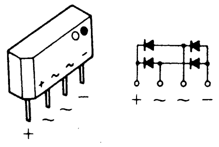
SLP151D


cathode
anode

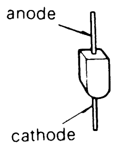
1S1555
EQB01-15


cathode
anode

SIVB20



SV02


anode
cathode

Note:

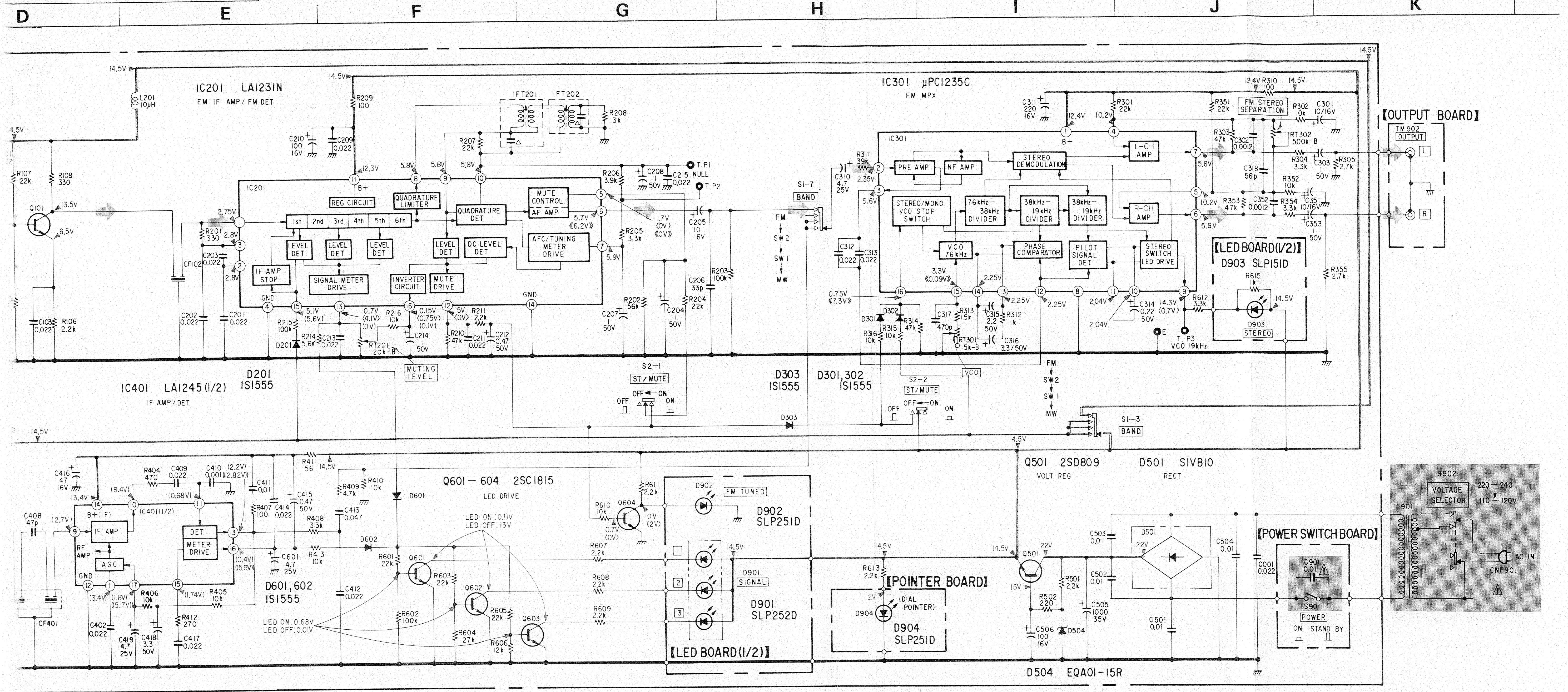
- All capacitors are in μF unless otherwise noted. pF : μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in ohms, ¼W unless otherwise noted. kΩ : 1000Ω, MΩ : 1000kΩ
- △ : internal component.
- ▭ : panel designation.
- ▭ : adjustment for repair.
- ——: B+ bus.
- Readings are taken under no-signal (detuned) conditions. with a VOM (20 kΩ/V)

no mark : FM (Detuned condition)
< > : FM (Tuned condition)
( ) : SW/MW (Detuned condition)
} ST/MUTE switch: ON
≪ ≫ : FM (Detuned condition) ST/MUTE switch: OFF
(( )) : SW/MW (Tuned condition)

- ➡ : signal path

Note: Voltage are measured with a VOM (50kΩ/V)

Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.


D
E
F
G
H
I
J
K
IC201 LA1231N
FM IF AMP / FM DET
IFT201
IFT202
REG CIRCUIT
QUADRATURE LIMITER
QUADRATURE DET
MUTE CONTROL
AF AMP
AFC/TUNING METER DRIVE
LEVEL DET
DC LEVEL DET
IF AMP STOP
SIGNAL METER DRIVE
INVERTER CIRCUIT
MUTE DRIVE
MUTING LEVEL
T.P1
NULL
T.P2
D201 1S1555
IC401 LA1245(1/2)
IF AMP/DET
S2-1
ST/MUTE
OFF ON
S1-7
BAND
FM
SW2
SW1
MW
IC301 µPC1235C
FM MPX
PRE AMP
NF AMP
STEREO DEMODULATION
STEREO/MONO VCO STOP SWITCH
76kHz-38kHz DIVIDER
38kHz-19kHz DIVIDER
38kHz-19kHz DIVIDER
VCO 76kHz
PHASE COMPARATOR
PILOT SIGNAL DET
STEREO SWITCH LED DRIVE
L-CH AMP
R-CH AMP
FM STEREO SEPARATION
D303 1S1555
D301,302 1S1555
S2-2
ST/MUTE
VCO
T.P3
VCO 19kHz
S1-3
BAND
【OUTPUT BOARD】
TM902
OUTPUT
L
R
【LED BOARD(1/2)】
D903 SLP151D
STEREO
RF AMP
IF AMP
AGC
DET
METER DRIVE
CF401
D601,602
1S1555
Q601-604 2SC1815
LED DRIVE
LED ON: 0.11V
LED OFF: 13V
LED ON: 0.68V
LED OFF: 0.01V
D902 SLP251D
FM TUNED
D901 SLP252D
SIGNAL
【LED BOARD(1/2)】
【POINTER BOARD】
(DIAL POINTER)
D904 SLP251D
Q501 2SD809
VOLT REG
D501 S1VB10
RECT
D504 EQA01-15R
【POWER SWITCH BOARD】
S901
POWER
ON STAND BY
S902
VOLTAGE SELECTOR
220-240
110-120V
T901
AC IN
CNP901

Note:

- All capacitors are in µF unless otherwise noted. pF : µµF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in ohms, ¼W unless otherwise noted. kΩ : 1000Ω, MΩ : 1000kΩ
- △ : internal component.
- ▭ : panel designation.
- ▭ : adjustment for repair.
- ——— : B+ bus.
- Readings are taken under no-signal (detuned) conditions with a VOM (20kΩ/V)

no mark : FM (Detuned condition) } ST/MUTE switch: ON
< > : FM (Tuned condition)
( ) : SW/MW (Detuned condition)
≪ ≫ : FM (Detuned condition) ST/MUTE switch: OFF
(( )) : SW/MW (Tuned condition)

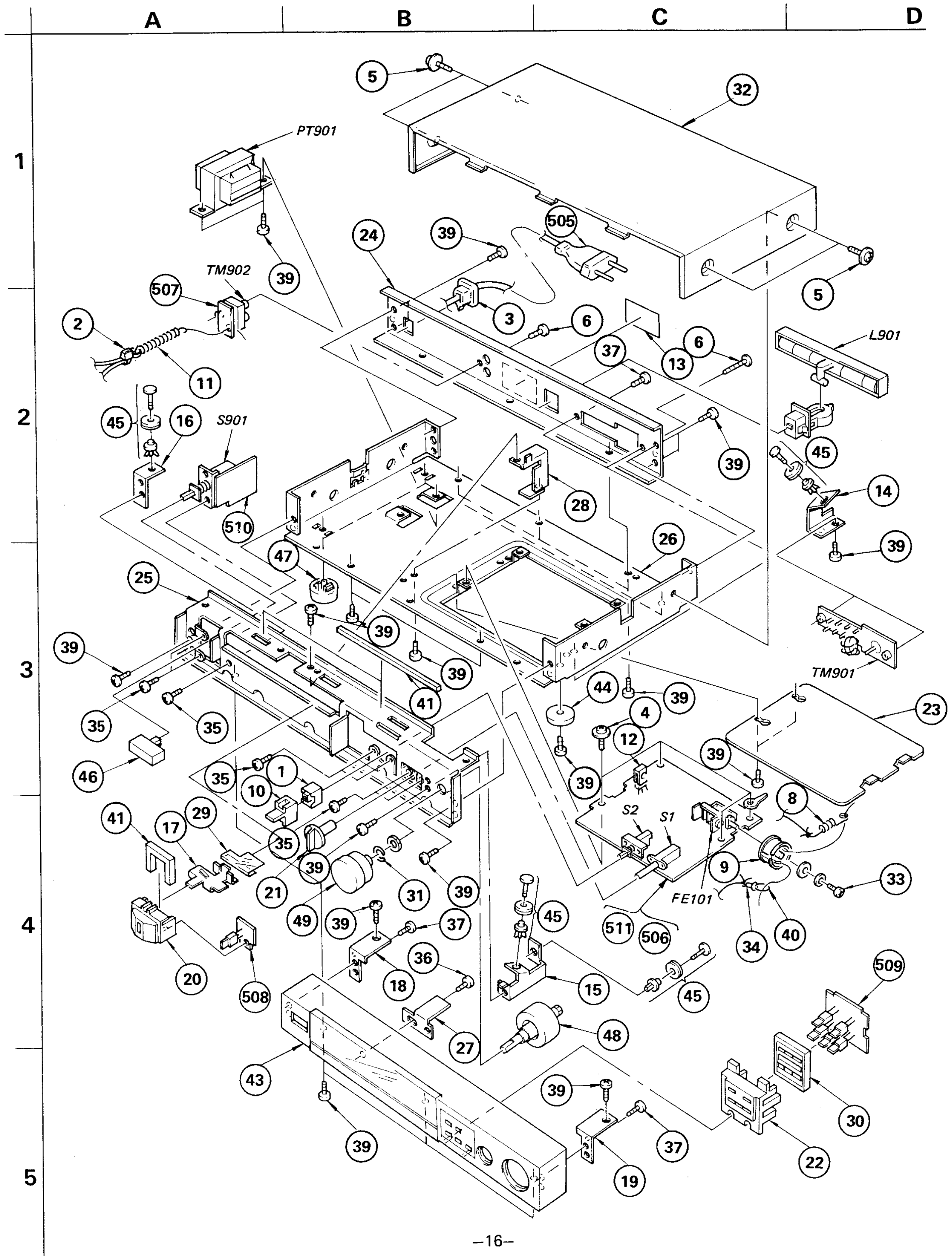
- ➡ : signal path

Note: Voltage are measured with a VOM (50kΩ/V)

Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

SECTION 5

EXPLODED VIEWS AND PARTS LIST



GENERAL SECTION

No.	Part No.	Description
1	3-302-902-00	KNOB, PUSH
2	3-671-893-00	CLAMP (LOW TYPE)
3	3-703-244-00	BUSHING, CORD
4	3-703-249-01	SCREW, S TIGHT, +PTTWH 3X6
5	3-703-354-11	SCREW (OS), CASE, CLAW
6	3-703-473-00	SCREW, TERMINAL
7	....	
8	4-809-050-00	SPRING, TENSION
9	4-859-586-01	DRUM (165), DIAL
10	4-864-307-00	RING
11	4-864-520-00	SPRING, TENSION
12 ♠;	4-866-080-00	HEAT SINK
13	4-881-510-00	LABEL, MODEL NUMBER (E1)(SWITCH)
14 ♠;	4-881-512-00	BRACKET (A), PULLEY
15 ♠;	4-881-513-00	BRACKET (B), PULLEY
16 ♠;	4-881-514-00	BRACKET (C), PULLEY
17 ♠;	4-881-515-00	BRACKET, POINTER
18 ♠;	4-881-516-00	BRACKET (LEFT), PANEL
19 ♠;	4-881-517-00	BRACKET (RIGHT), PANEL
20	4-881-519-00	POINTER
21	4-881-520-02	KNOB (DIA. 18)
22	4-881-521-00	HOLDER, LED
23 ♠;	4-881-522-00	PLATE, BOTTOM
24 ♠;	4-881-525-41	PLATE, JACK
25 ♠;	4-881-526-00	PANEL, SUB
26 ♠;	4-881-529-00	CHASSIS
27 ♠;	4-881-531-00	BRACKET (C), PANEL
28 ♠;	4-881-533-00	REINFORCEMENT
29	4-881-534-00	SLIDER
30	4-881-535-00	HOLDER
31	4-881-539-00	RING
32	4-891-528-00	CASE
33	7-621-759-45	+PSW, 2.6X6
34	7-623-615-01	EYELET, 2X2
35	7-682-147-09	SCREW +P 3X6
36	7-685-134-11	SCREW +P 2.6X8 TYPE2 NON-SLIT
37	7-685-646-11	SCREW +BVTP 3X8 TYPE2 N-S
38	7-685-872-01	SCREW +BVTT 3X8
39	7-685-871-01	SCREW +BVTT 3X6 (S)
40	9-911-825-42	STRING, 0.5MM WHITE
41	9-911-845-XX	CUSHION
42	9-911-863-XX	SHEET, FIBER
43	A-4322-428-A	PANEL ASSY
44	X-3701-069-0	FOOT ASSY, M.F
45	X-4864-705-0	PULLEY ASSY

GENERAL SECTION

No.	Part No.	Description
46	X-4875-108-0	KNOB ASSY, POWER
47	X-4875-123-1	FOOT ASSY, MF
48 ♠;	X-4881-501-0	WHEEL ASSY, TUNING
49	X-4881-503-0	KNOB (DIA.28) ASSY, R

ACCESSORY & PACKING MATERIAL

No.	Part No.	Description
91	1-501-161-00	ANTENNA,FEEDER
92	1-551-734-31	CORD, CONNECTION
93	3-701-630-00	BAG, POLYETHYLENE
94	1-526-565-00	AC PLUG ADAPTOR
95	3-783-846-11	MANUAL, INSTRUCTION
96	1-501-193-00	ANTENNA
97	4-875-352-00	SHEET, PROTECTION
98	4-881-536-00	CUSHION, UPPER
99	4-881-537-00	CUSHION, LOWER
100	4-881-542-00	CUSHION, CARTON
101	4-811-544-00	INDIVIDUAL CARTON

NOTE:
- Items with no part number and no description are not stocked because they are seldom required for routine service.
- Items marked " ♠ " are not stocked since thev are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Due to standardization, parts with part numbers (Δ-ΔΔΔ-ΔΔΔ-XX or Δ-ΔΔΔΔ-ΔΔΔ-X) may be diff•rent from those used in the set.

CAPACITORS:
- All capacitors are in μF. Common capacitors are omitted. Refer to the following lists for their part numbers. MF:μF, PF:μμF.

RESISTORS
- All resistors are in ohms. Common 1/4W, 1/8W and 1/16W carbon resistors are omitted. Refer to the following lists for their part numbers.
- F : nonflammable

COILS
- MMH : mH, UH : μH

SEMICONDUCTORS
In each case, U : μ, for example:
UA···: μA···, UPA···: μPA···, UPC···: μPC,
UPD···: μPD···

Ref.No.

501 ♠
502 ♠
503

504
505 ⚠
506 ♠

507 ♠
508 ♠
509 ♠

510 ♠
511 ♠

C317
C410
C421

C423
C430
C431

C432
C433
C901 ⚠

CF101
CF102
CF401

CT401
CT402
CT403

CT404
CT405
CT406

D201
D301
D302

D303
D501
D504

D601
D602
D901

D902
D903
D904

FE101

IC201
IC301
IC401

NOTE:
- Items with r
cription are
are seldom r
- Items markec
thev are sel
service. Sc
pated when c
- Due to stanc
numbers (Δ-Δ
may be diffe
set.

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6	3-703-473-00	SCREW, TERMINAL
7	....	
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9	4-859-586-01	DRUM (165), DIAL
10	4-864-307-00	RING
11	4-864-520-00	SPRING, TENSION
12	●;4-866-080-00	HEAT SINK
13	4-881-510-00	LABEL, MODEL NUMBER (E1)(SWITCH)
14	●;4-881-512-00	BRACKET (A), PULLEY
15	●;4-881-513-00	BRACKET (B), PULLEY
16	●;4-881-514-00	BRACKET (C), PULLEY
17	●;4-881-515-00	BRACKET, POINTER
18	●;4-881-516-00	BRACKET (LEFT), PANEL
19	●;4-881-517-00	BRACKET (RIGHT), PANEL
20	4-881-519-00	POINTER
21	4-881-520-02	KNOB (DIA. 18)
22	4-881-521-00	HOLDER, LED
23	●;4-881-522-00	PLATE, BOTTOM
24	●;4-881-525-41	PLATE, JACK
25	●;4-881-526-00	PANEL, SUB
26	●;4-881-529-00	CHASSIS
27	●;4-881-531-00	BRACKET (C), PANEL
28	●;4-881-533-00	REINFORCEMENT
29	4-881-534-00	SLIDER
30	4-881-535-00	HOLDER
31	4-881-539-00	RING
32	4-891-528-00	CASE
33	7-621-759-45	+PSW, 2.6X6
34	7-623-615-01	EYELET, 2X2
35	7-682-147-09	SCREW +P 3X6
36	7-685-134-11	SCREW +P 2.6X8 TYPE2 NON-SLIT
37	7-685-646-11	SCREW +BVTP 3X8 TYPE2 N-S
38	7-685-872-01	SCREW +BVTT 3X8
39	7-685-871-01	SCREW +BVTT 3X6 (S)
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41	9-911-845-XX	CUSHION
42	9-911-863-XX	SHEET, FIBER
43	A-4322-428-A	PANEL ASSY
44	X-3701-069-0	FOOT ASSY, M.F
45	X-4864-705-0	PULLEY ASSY

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No.	Part No.	Description
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48	●;X-4881-501-0	WHEEL ASSY, TUNING
49	X-4881-503-0	KNOB (DIA.28) ASSY, R

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94	1-526-565-00	AC PLUG ADAPTOR
95	3-783-846-11	MANUAL, INSTRUCTION
96	1-501-193-00	ANTENNA
97	4-875-352-00	SHEET, PROTECTION
98	4-881-536-00	CUSHION, UPPER
99	4-881-537-00	CUSHION, LOWER
100	4-881-542-00	CUSHION, CARTON
101	4-811-544-00	INDIVIDUAL CARTON

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- F : nonflammable

COILS

- MMH : mH, UH : μH

SEMICONDUCTORS

In each case, U : μ, for example:
UA···: μA···, UPA···: μPA···, UPC···: μPC,
UPD···: μPD···

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
501	●;1-535-115-00	TERMINAL			
502	●;1-535-116-00	TERMINAL			
503	1-560-595-00	TERMINAL (WITH BASE)			
504	....				
505	⚠;1-551-427-11	CORD, POWER, EULO PLUG			
506	●;1-607-334-12	PC BOARD, TUNER			
507	●;1-607-335-00	PC BOARD, OUTPUT			
508	●;1-607-336-12	PC BOARD, POINTER			
509	●;1-607-337-12	PC BOARD, LED			
510	●;1-607-338-00	PC BOARD, POWER SWITCH			
511	●;A-4351-305-A	MOUNTED PCB, TUNER			
C317	1-104-069-00	STYROL	470PF	5%	50V
C410	1-161-323-00	CERAMIC	0.001MF	10%	50V
C421	1-104-067-00	STYROL	390PF	5%	50V
C423	1-161-252-00	CERAMIC	2.7PF	5%	50V
C430	1-103-735-00	STYROL	0.0027MF	5%	50V
C431	1-161-309-00	CERAMIC	47PF	5%	50V
C432	1-103-747-00	STYROL	0.0082MF	5%	50V
C433	1-161-310-11	CERAMIC	56PF	5%	50V
C901	⚠.1-101-004-61	CERAMIC	0.01MF		50V
CF101	1-527-968-00	FILTER, CERAMIC			
CF102	1-527-964-00	FILTER, CERAMIC			
CF401	1-527-937-00	FILTER, CERAMIC			
CT401	1-141-180-00	CAP, TRIMMER			
CT402	1-141-180-00	CAP, TRIMMER			
CT403	1-141-180-00	CAP, TRIMMER			
CT404	1-141-180-00	CAP, TRIMMER			
CT405	1-141-180-00	CAP, TRIMMER 15P			
CT406	1-141-180-00	CAP, TRIMMER 15P			
D201	8-719-815-55	DIODE 1S1555			
D301	8-719-815-55	DIODE 1S1555			
D302	8-719-815-55	DIODE 1S1555			
D303	8-719-815-55	DIODE 1S1555			
D501	8-719-511-20	DIODE S1VB20			
D504	8-719-931-15	DIODE EQB01-15			
D601	8-719-815-55	DIODE 1S1555			
D602	8-719-815-55	DIODE 1S1555			
D901	8-719-901-78	DIODE SLP252D-03			
D902	8-719-902-52	DIODE SLP251D			
D903	8-719-901-53	DIODE SLP151D			
D904	8-719-902-52	DIODE SLP251D			
FE101	1-463-405-00	FRONT END			
IC201	8-759-812-31	IC LA1231			
IC301	8-759-112-35	IC UPC1235C			
IC401	8-759-812-45	IC LA1245			
IFT201	1-404-400-00	TRANSFORMER, DISCRIMINATOR			
IFT202	1-404-401-00	TRANSFORMER, DISCRIMINATOR			
IFT401	1-404-383-00	TRANSFORMER, IF			
L201	1-407-157-XX	MICRO INDUCTOR 10UH			
L401	1-407-708-00	MICRO INDUCTOR 180UH			
L403	1-401-910-00	COIL (ANT)			
L404	1-401-975-00	COIL, ANT (SW2)			
L405	1-408-109-00	MICRO INDUCTOR 2.2UH			
L901	1-401-978-00	ANTENNA, FERRITE-ROD (MW)			
PT901	⚠1-447-313-00	TRANSFOMER, POWER			
Q101	8-729-671-15	TRANSISTOR 2SC710-15			
Q501	8-729-180-93	TRANSISTOR 2SD809-F			
Q601	8-729-663-47	TRANSISTOR 2SC1364			
Q602	8-729-663-47	TRANSISTOR 2SC1364			
Q603	8-729-663-47	TRANSISTOR 2SC1364			
Q604	8-729-663-47	TRANSISTOR 2SC1364			
RT201	1-226-237-00	RES, ADJ, CARBON 20K			
RT301	1-226-235-00	RES, ADJ, CARBON 5K			
RT302	1-226-241-00	RES, ADJ, CARBON 500K			
S1	1-554-130-00	SWITCH, ROTARY SLIDE			
S2	1-554-128-00	SWITCH, PUSH (1 KEY)			
S901	⚠.1-553-072-21	SWITCH, PUSH			
S902	⚠.1-552-535-00	SWITCH, POWER & VOLTAGE CHANGE			
T401	1-405-953-00	COIL (OSC)			
T403	1-405-955-00	COIL (OSC)			
T404	1-406-022-00	COIL, OSC (SW2)			
TM901	1-536-663-00	TERMINAL BOARD (ANTENNA) (INCLUDING L902,C001)			
TM902	1-507-731-00	JACK, PIN 2P			

NOTE:

- Items with no part number and no description are not stocked because they are seldom required for routine service.
- Items marked " ● " are not stocked since thev are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Due to standardization, parts with part numbers (Δ-ΔΔΔ-ΔΔΔ-XX or Δ-ΔΔΔΔ-ΔΔΔ-X) may be different from those used in the set.

CAPACITORS:

- All capacitors are in μF. Common capacitors are omitted. Refer to the following lists for their part numbers. MF:μF, PF:μμF.

RESISTORS

- All resistors are in ohms. Common 1/4W, 1/8W and 1/16W carbon resistors are omitted. Refer to the following lists for their part numbers.

- F : nonflammable

COILS

- MMH : mH, UH : μH

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

SEMICONDUCTORS

In each case, U : μ, for example:
UA···: μA···, UPA···: μPA···, UPC···: μPC,
UPD···: μPD···

ELECTROLYTIC CAPACITORS

	RATING				→ : Use the high voltage rated one.	
CAP. (μF)	6.3 VOLT.	10 VOLT.	16 VOLT.	25 VOLT.	35 VOLT.	50 VOLT.
	PART No.	PART No.	PART No.	PART No.	PART No.	PART No.
0.47					→	1-121-726-00
1.0					→	1-121-391-00
2.2					→	1-121-450-00
3.3	→	→	→	1-121-392-00	→	1-121-393-00
4.7	→	→	→	1-121-395-00	→	1-121-396-00
10	→	→	1-121-651-00	1-121-398-00	→	1-121-738-00
22	→	→	1-121-479-00	1-121-480-00	1-121-662-00	1-121-152-00
33	→	→	1-121-403-00	1-121-404-00	1-121-652-00	1-121-405-00
47	→	1-121-352-00	1-121-409-00	1-121-410-00	1-121-653-00	1-121-411-00
100	→	1-121-414-00	1-121-415-00	1-121-416-00	1-121-357-00	1-121-417-00
220	1-121-419-00	1-121-420-00	1-121-421-00	1-121-422-00	1-121-261-00	1-121-423-00
330	1-121-751-00	1-121-805-00	1-121-521-00	1-121-654-00	1-121-655-00	1-121-656-00
470	1-121-424-00	1-121-425-00	1-121-426-00	1-121-733-00	1-121-361-00	1-121-810-00
1000	–	1-121-736-00	1-121-245-00	1-121-657-00	1-121-388-00	1-123-061-00
2200	1-121-658-00	1-121-659-00	1-121-660-00	1-123-067-00	1-121-984-00	–
3300	1-121-661-00	1-123-075-00	1-123-071-00	–	–	–

CAP. (μF)	100 VOLT.	160 VOLT.	250 VOLT.	350 VOLT.
	PART No.	PART No.	PART No.	PART No.
0.47	–	–	–	–
1.0	1-123-249-00	1-123-252-00	1-123-003-00	1-121-168-00
2.2	1-123-250-00	1-123-026-00	–	1-123-028-00
3.3	1-121-995-00	–	1-123-004-00	1-123-006-00
4.7	1-123-255-00	1-121-246-00	1-121-759-00	1-123-007-00
10	1-121-126-00	1-121-999-00	1-123-254-00	1-123-008-00
22	1-121-996-00	1-123-253-00	1-123-005-00	1-123-022-00
33	1-121-997-00	1-121-757-00	–	–
47	1-123-251-00	1-121-919-00	–	–
100	1-123-084-00	–	–	–

CERAMIC CAPACITORS

			RATING				
CAP. (pF)	50 VOLT.	CAP. (pF)	50 VOLT.	CAP. (pF)	50 VOLT.	CAP. (μF)	50 VOLT.
	PART No.		PART No.		PART No.		PART No.
0.5	1-101-837-00	22	1-102-959-00	150	1-101-361-00	0.001	1-102-074-00
0.75	1-101-586-00	24	1-102-960-00	160	1-101-367-00	0.0012	1-102-118-00
1.0	1-102-934-00	27	1-102-961-00	180	1-102-976-00	0.0015	1-102-119-00
1.5	1-101-576-00	30	1-102-962-00	200	1-102-977-00	0.0018	1-102-120-00
2.0	1-102-935-00	33	1-102-963-00	220	1-102-978-00	0.0022	1-102-121-00
3	1-102-936-00	36	1-102-964-00	240	1-102-979-00	0.0027	1-102-122-00
4	1-102-937-00	39	1-102-965-00	270	1-102-980-00	0.0033	1-102-123-00
5	1-102-942-00	43	1-102-966-00	300	1-102-981-00	0.0039	1-102-124-00
6	1-102-943-00	47	1-101-880-00	330	1-102-820-00	0.0047	1-102-125-00
7	1-102-944-00	51	1-101-882-00	360	1-102-821-00	0.0056	1-102-126-00
8	1-102-945-00	56	1-101-884-00	390	1-102-822-00	0.0068	1-102-127-00
9	1-102-946-00	62	1-101-886-00	430	1-102-823-00	0.0082	1-102-128-00
10	1-102-947-00	68	1-101-888-00	470	1-102-824-00	0.01	1-102-129-00
11	1-102-948-00	75	1-101-890-00	510	1-101-059-00	0.022	1-101-005-00
12	1-102-949-00	82	1-102-971-00	560	1-102-115-00	0.047	1-101-006-00
13	1-102-950-00	91	1-102-972-00	680	1-102-116-00		
15	1-102-951-00	100	1-102-973-00	820	1-102-117-00		
16	1-102-952-00	110	1-102-815-00				
18	1-102-953-00	120	1-102-816-00				
20	1-102-958-00	130	1-101-081-00				

0.001μF = 1,000pF

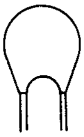
CERAMIC (SEMICONDUCTOR) CAPACITORS

			RATING	→ : Use the high voltage rated one.	
CAP. (μF)	25 VOLT.	50 VOLT.	CAP. (μF)	25 VOLT.	50 VOLT.
	PART No.	PART No.		PART No.	PART No.
0.001	→	1-161-039-00	0.018	1-161-016-00	1-161-054-00
0.0012	→	1-161-040-00	0.022	1-161-017-00	1-161-055-00
0.0015		1-161-041-00	0.027	1-161-018-00	1-161-056-00
0.0018		1-161-042-00	0.033	1-161-019-00	1-161-057-00
0.0022		1-161-043-00	0.039	1-161-010-00	1-161-058-00
0.0027	→	1-161-044-00	0.047	1-161-021-00	1-161-059-00
0.0033	→	1-161-045-00	0.056	→	1-161-060-00
0.0039	→	1-161-046-00	0.068	→	1-161-061-00
0.0047	→	1-161-047-00	0.082	1-161-024-00	1-161-062-00
0.0056	→	1-161-048-00	0.1	1-161-025-00	1-161-063-00
0.0068	→	1-161-049-00			
0.0082	1-161-012-00	1-161-050-00			
0.01	1-161-013-00	1-161-051-00			
0.012	→	1-161-052-00			
0.015	1-161-015-00	1-161-053-00			

MYLAR CAPACITORS

RATING											
CAP. (μF)	50 VOLT.	100 VOLT.	200 VOLT.	CAP. (μF)	50 VOLT.	100 VOLT.	200 VOLT.	CAP. (μF)	50 VOLT.	100 VOLT.	200 VOLT.
	PART No.	PART No.	PART No.		PART No.	PART No.	PART No.		PART No.	PART No.	PART No.
0.001	1-108-227-00	1-108-365-00	1-108-409-00	0.01	1-108-239-00	1-108-377-00	1-108-421-00	0.1	1-108-251-00	1-108-389-00	1-108-433-00
0.0012	1-108-351-00	1-108-366-00	1-108-410-00	0.012	1-108-357-00	1-108-378-00	1-108-422-00	0.12	1-108-363-00	1-108-390-00	1-108-434-00
0.0015	1-108-228-00	1-108-367-00	1-108-411-00	0.015	1-108-240-00	1-108-379-00	1-108-423-00	0.15	1-108-252-00	1-108-391-00	1-108-435-00
0.0018	1-108-352-00	1-108-368-00	1-108-412-00	0.018	1-108-358-00	1-108-380-00	1-108-424-00	0.18	1-108-364-00	1-108-392-00	1-108-436-00
0.0022	1-108-230-00	1-108-369-00	1-108-413-00	0.022	1-108-242-00	1-108-381-00	1-108-425-00	0.22	1-108-254-00	1-108-393-00	1-108-437-00
0.0027	1-108-353-00	1-108-370-00	1-108-414-00	0.027	1-108-359-00	1-108-382-00	1-108-426-00	0.27	1-108-854-00	–	–
0.0033	1-108-232-00	1-108-371-00	1-108-415-00	0.033	1-108-244-00	1-108-383-00	1-108-427-00	0.33	1-108-855-00	–	–
0.0039	1-108-354-00	1-108-372-00	1-108-416-00	0.039	1-108-360-00	1-108-384-00	1-108-428-00	0.39	1-108-856-00	–	–
0.0047	1-108-234-00	1-108-373-00	1-108-417-00	0.047	1-108-246-00	1-108-385-00	1-108-429-00	0.47	1-108-857-00	–	–
0.0056	1-108-355-00	1-108-374-00	1-108-418-00	0.056	1-108-361-00	1-108-386-00	1-108-430-00				
0.0068	1-108-237-00	1-108-375-00	1-108-419-00	0.068	1-108-249-00	1-108-387-00	1-108-431-00				
0.0082	1-108-356-00	1-108-376-00	1-108-420-00	0.082	1-108-362-00	1-108-388-00	1-108-432-00				

TANTALUM CAPACITORS



RATING				→: Use the high voltage rated one.			
CAP. (μF)	3.15 VOLT.	6.3 VOLT.	10 VOLT.	16 VOLT.	20 VOLT.	25 VOLT.	35 VOLT.
	PART No.	PART No.	PART No.	PART No.	PART No.	PART No.	PART No.
0.01					→	→	1-131-396-00
0.015						→	1-131-397-00
0.022						→	1-131-398-00
0.033						→	1-131-399-00
0.047						→	1-131-400-00
0.068					→	→	1-131-401-00
0.1					→	→	1-131-402-00
0.15					→	→	1-131-403-00
0.22					→	→	1-131-404-00
0.33					→	1-131-409-00	1-131-405-00
0.47	–	–	–	–	1-131-412-00	→	1-131-406-00
0.68	–	–	–	1-131-415-00	→	1-131-410-00	1-131-407-00
1.0	–	–	1-131-418-00	–	1-131-413-00	→	1-131-408-00
1.5	–	1-131-421-00	–	1-131-416-00	→	1-131-411-00	1-131-348-00
2.2	1-131-424-00	–	1-131-419-00	–	1-131-414-00	1-131-355-00	1-131-349-00
3.3	–	1-131-422-00	–	1-131-417-00	1-131-362-00	1-131-356-00	1-131-350-00
4.7	1-131-425-00	–	1-131-420-00	1-131-369-00	1-131-363-00	1-131-357-00	1-131-351-00
6.8	–	1-131-423-00	1-131-376-00	1-131-370-00	1-131-364-00	1-131-358-00	1-131-352-00
10	1-131-426-00	1-131-383-00	1-131-377-00	1-131-371-00	1-131-365-00	1-131-359-00	1-131-353-00
15	1-131-390-00	1-131-384-00	1-131-378-00	1-131-372-00	1-131-366-00	1-131-360-00	–
22	1-131-391-00	1-131-385-00	1-131-379-00	1-131-373-00	1-131-367-00		
33	1-131-392-00	1-131-386-00	1-131-380-00	1-131-374-00			
47	1-131-393-00	1-131-387-00	1-131-381-00	–			
68	1-131-394-00	1-131-388-00	–	–			
100	1-131-395-00	–	–	–			

TANTALUM CAPACITORS

RATING						
CAP. (μF)	3 VOLT.	6.3 VOLT.	10 VOLT.	16 VOLT.	20 VOLT.	35 VOLT.
	PART No.	PART No.	PART No.	PART No.	PART No.	PART No.
0.033						1-131-273-00
0.047						1-131-274-00
0.068						1-131-275-00
0.1						1-131-276-00
0.15						1-131-277-00
0.22			–	–	1-131-262-00	1-131-278-00
0.33			–	–	1-131-263-00	1-131-279-00
0.47			1-131-169-00	–	1-131-264-00	1-131-280-00
0.68			–	1-131-258-00	1-131-265-00	1-131-281-00
1.0			1-131-254-00	–	1-131-266-00	1-131-282-00
1.5		1-131-250-00	–	–	1-131-267-00	1-131-283-00
2.2		–	–	1-131-259-00	1-131-268-00	1-131-284-00
3.3		–	1-131-255-00	–	1-131-269-00	–
4.7		1-131-251-00	1-131-171-00	–	1-131-270-00	–
6.8		–	–	1-131-260-00	1-131-271-00	–
10	–	–	1-131-256-00	–	1-131-272-00	–
15	–	1-131-252-00	–	1-131-261-00		
22	–	–	1-131-257-00	–		
33	1-131-176-00	1-131-253-00	1-131-173-00	–		
47	1-131-288-00	1-131-174-00	–	–		
100	1-131-177-00					

1/4 WATT CARBON RESISTORS

Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.
1.0	1-246-401-00	10	1-246-425-00	100	1-246-449-00	1.0k	1-246-473-00	10k	1-246-497-00	100k	1-246-521-00	1.0M	1-246-545-00
1.1	1-246-402-00	11	1-246-426-00	110	1-246-450-00	1.1k	1-246-474-00	11k	1-246-498-00	110k	1-246-522-00	1.1M	1-210-814-00
1.2	1-246-403-00	12	1-246-427-00	120	1-246-451-00	1.2k	1-246-475-00	12k	1-246-499-00	120k	1-246-523-00	1.2M	1-210-815-00
1.3	1-246-404-00	13	1-246-428-00	130	1-246-452-00	1.3k	1-246-476-00	13k	1-246-500-00	130k	1-246-524-00	1.3M	1-210-816-00
1.5	1-246-405-00	15	1-246-429-00	150	1-246-453-00	1.5k	1-246-477-00	15k	1-246-501-00	150k	1-246-525-00	1.5M	1-210-817-00
1.6	1-246-406-00	16	1-246-430-00	160	1-246-454-00	1.6k	1-246-478-00	16k	1-246-502-00	160k	1-246-526-00	1.6M	1-210-818-00
1.8	1-246-407-00	18	1-246-431-00	180	1-246-455-00	1.8k	1-246-479-00	18k	1-246-503-00	180k	1-246-527-00	1.8M	1-210-819-00
2.0	1-246-408-00	20	1-246-432-00	200	1-246-456-00	2.0k	1-246-480-00	20k	1-246-504-00	200k	1-246-528-00	2.0M	1-210-820-00
2.2	1-246-409-00	22	1-246-433-00	220	1-246-457-00	2.2k	1-246-481-00	22k	1-246-505-00	220k	1-246-529-00	2.2M	1-210-821-00
2.4	1-246-410-00	24	1-246-434-00	240	1-246-458-00	2.4k	1-246-482-00	24k	1-246-506-00	240k	1-246-530-00	2.4M	1-244-754-00
2.7	1-246-411-00	27	1-246-435-00	270	1-246-459-00	2.7k	1-246-483-00	27k	1-246-507-00	270k	1-246-531-00	2.7M	1-244-755-00
3.0	1-246-412-00	30	1-246-436-00	300	1-246-460-00	3.0k	1-246-484-00	30k	1-246-508-00	300k	1-246-532-00	3.0M	1-244-756-00
3.3	1-246-413-00	33	1-246-437-00	330	1-246-461-00	3.3k	1-246-485-00	33k	1-246-509-00	330k	1-246-533-00	3.3M	1-244-757-00
3.6	1-246-414-00	36	1-246-438-00	360	1-246-462-00	3.6k	1-246-486-00	36k	1-246-510-00	360k	1-246-534-00	3.6M	1-244-758-00
3.9	1-246-415-00	39	1-246-439-00	390	1-246-463-00	3.9k	1-246-487-00	39k	1-246-511-00	390k	1-246-535-00	3.9M	1-244-759-00
4.3	1-246-416-00	43	1-246-440-00	430	1-246-464-00	4.3k	1-246-488-00	43k	1-246-512-00	430k	1-246-536-00	4.3M	1-244-760-00
4.7	1-246-417-00	47	1-246-441-00	470	1-246-465-00	4.7k	1-246-489-00	47k	1-246-513-00	470k	1-246-537-00	4.7M	1-244-761-00
5.1	1-246-418-00	51	1-246-442-00	510	1-246-466-00	5.1k	1-246-490-00	51k	1-246-514-00	510k	1-246-538-00	5.1M	1-244-762-00
5.6	1-246-419-00	56	1-246-443-00	560	1-246-467-00	5.6k	1-246-491-00	56k	1-246-515-00	560k	1-246-539-00		
6.2	1-246-420-00	62	1-246-444-00	620	1-246-468-00	6.2k	1-246-492-00	62k	1-246-516-00	620k	1-246-540-00		
6.8	1-246-421-00	68	1-246-445-00	680	1-246-469-00	6.8k	1-246-493-00	68k	1-246-517-00	680k	1-246-541-00		
7.5	1-246-422-00	75	1-246-446-00	750	1-246-470-00	7.5k	1-246-494-00	75k	1-246-518-00	750k	1-246-542-00		
8.2	1-246-423-00	82	1-246-447-00	820	1-246-471-00	8.2k	1-246-495-00	82k	1-246-519-00	820k	1-246-543-00		
9.1	1-246-424-00	91	1-246-448-00	910	1-246-472-00	9.1k	1-246-496-00	91k	1-246-520-00	910k	1-246-544-00		

HARDWARE NOMENCLATURE

Screw:

– P 3 x 10

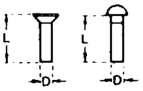
L: Length in mm

D: Diameter in mm

Type of head

Indicated slotted-head only.

Unless otherwise indicated, it means cross-recessed head (Phillips type).



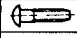
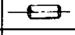
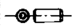
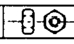
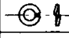
Reference Designation	Shape	Description	Remarks
		SCREWS	
P		pan-head screw	binding-head (B) screw for replacement
PWH		pan-head screw with washer face	binding-head (B) screw and flat washer for replacement
PS PSP		pan-head screw with spring washer	binding-head (B) screw and spring washer for replacement
PSW PSPW		pan-head screw with spring and flat washers	binding-head (B) screw and spring and flat washers for replacement
R		round-head screw	binding-head (B) screw for replacement
K		flat-countersunk-head screw	
RK		oval-countersunk-head screw	
B		binding-head screw	
T		truss-head screw	binding-head (B) screw for replacement
F		flat-fillister-head screw	
RF		fillister-head screw	
BV		braizer-head screw	

Nut, Washer, Retaining ring:

N 3

Diameter of usable screw or shaft

Reference designation

Reference Designation	Shape	Description	Remarks
		SELF-TAPPING SCREWS	
TA		self-tapping screw	ex: TA, P 3 x 10
PTP		pan-head self-tapping screw	binding-head self-tapping (TA, B) screw for replacement
PTPWH		pan-head self-tapping screw with washer face	binding-head self tapping (TA, B) screw and flat washer for replacement
PTTWH		pan-head thread-rolling screw with washer face	binding-head (B) screw and flat washer for replacement
		SET SCREWS	
SC		set screw	
SC		hexagon-socket set screw	ex: SC 2.6 x 4, hexagon socket
		NUT	
N		nut	
		WASHERS	
W		flat washer	
SW		spring washer	
LW		internal-tooth lock washer	ex: LW3, internal
LW		external-tooth lock washer	ex: LW3, external
		RETAINING RINGS	
E		retaining ring	
G		grip-type retaining ring	